

Since FCC now type-accepts commercially designed and manufactured amateur transmitters and linear amplifiers, the Petitioner has demonstrated some points worth consideration as part of the Commission's responsibility to ensure both initial and continuing proper operational performance of such equipment.

For example, maintainability of manufactured equipment is not known to be a factor in such type acceptance, but could be a consideration to ensure proper equipment operation throughout its operational life.

Documentation of commercially designed amateur equipment for the most part leaves a lot to be desired and is at the heart of this Petition. Most manufacturers' service manual literature is at best a poor copy of a circuit board image and schematics are often too small or lacking measurement points or values. Parts lists are cryptic and the English language is usually extremely poor and hard to understand.

An example to be followed can be found in the service literature produced by Motorola Communications and Electronics. Motorola provides numerous schematics of their equipment including specific metering points and voltages; circuit board views from both component and foil sides with metering points clearly identified.

Service literature is written to the point of even step-by-step removal of case and other components, making disassembly and reassembly easy. Developments of component and case assemblies with detail down to the screw and washer level make disassembly and reassembly simple.

To address specific points, the Petitioner's suggestion of field-replaceable circuit boards or modules, cables and connectors certainly would make sense.

Wide spacing of components, on the otherhand, is somewhat vague and could easily create problems for certain circuitry such as stripline and other frequency sensitive circuitry. Small surface mount components up to VLSI can be found, removed and replaced using proper equipment and desoldering techniques. Amply prepared service literature as noted in the Motorola example would solve such problems.

Test points should be clearly identified on pictorials, as are the case on the example Motorola service literature.

Digital system buses would be difficult to monitor. On the other hand, functional operation flow charts as are found in current Motorola service literature can quickly narrow a myriad of possible misoperations including digital circuitry and allow an amateur without a great deal of experience to find the defective component or IC.

Chassis/board shields must in many instances be kept in place even for troubleshooting as their removal may cause erroneous operation. Instead, as again is the case with Motorola equipment, small apertures are designed-in to access metering points, and adjustable capacitors and inductors.

Removeable ICs sounds terrific, but that would preclude use of many surface mount devices which would adversely affect both equipment size and performance. Socketed devices also in some cases may cause degraded performance. Especially in RF VLSI circuitry.

Spare component availability is certainly a critical factor. Especially with unique VLSI devices. It would seem reasonable to offer replacement components

that are not standardized for a period of at least 8 to 10 years following last production.

Service manual availability should match the timeframe for unique devices. A minimum of 8 to 10 years after last production. And, since service literature quality I believe to be at the heart of this issue, the format of such literature should closely follow the Motorola format and example as a required part of the Commission's type acceptance process.

I support this Petition and recommend that the Commission adopt it in part to include enhanced service literature which will permit effective maintenance and troubleshooting of commercially designed and manufactured amateur equipment by amateur radio operators. And that such requirements be incorporated as part of the type acceptance process for such equipment.

Respectfully Submitted,

/s/

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